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ABSTRACT

This document is intended to provide suggestions to the decision makers in Hawaii's public education system who are trying to find strategies for better integrating vocational and academic education and who are considering granting equivalent credit for basic academic skills taught in vocational and academic courses. The following topics are covered: the concept of equivalent credit, vocational courses that include academic skills, vocational courses that award academic credit, the extent to which equivalent credit is granted, an exemplary (Illinois) state procedure regarding equivalent credit, some unique approaches to granting academic credit for vocational education courses, procedures for developing an equivalent credit plan, and related issues concerning equivalent credit. (MN)

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State Board for Vocational Education

Office of the State Director for Vocational Education

Granting Academic Credit For Vocational Education

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Granting Academic Credit For Vocational Education

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December, 1988

Preface

Today, as never before, vocational education is challenged to meet the widely varying needs of students from increasingly diverse backgrounds. Vocational education is also challenged to meet the needs of business and industry for workers who are conversant in basic academic skills and who are skilled in performing the tasks required to be productive employees. The vocational education community finds itself being asked to change its methods of delivery and to change the context of its programs to better meet the expectations of society.

Vocational education may have been targeted but the issue is much broader. The issue is excellence in education; and more specifically, excellence in secondary education.

In response, organizations such as the National Education Association and the American Federation of Teachers have called for greater integration of vocational and academic education. The leaders of these organizations believe that "cross credentialing" or granting academic credit for vocational education may be part of the solution to achieving excellence in secondary education.

This document provides suggestions to the decision makers in Hawaii's public education system who are trying to find strategies to achieve excellence in secondary education. Indeed, Granting Academic Credit for Vocational Education is for anyone who believes that excellence in secondary education can be achieved by:

-helping students see the connections between what they learn in school and everyday applications, demonstrating how school subjects contribute to future employability, and making more informed choices of secondary course offerings that will match long-term career areas of interest;

-making more effective use of valuable classroom and laboratory time;

-encouraging teachers to show how coursework in one field relates to the content in another area of study;

-taking advantage of diverse student learning styles, recognizing that many students learn better if they can apply theoretical concepts using an experiential framework;

-capitalizing on diverse teaching styles, recognizing that a common core of skills can be taught in a variety of ways;

-providing diversity in the areas that students can explore, recognizing that they will make three to five career changes in their lifetimes.

The Office of the State Director for Vocational Education, serving as staff to the State Board for Vocational Education, submits this research document as a viewpoint that the time has come for

secondary schools in Hawaii to recognize the historic connections between vocational education and academic skills. It is time for curriculum leaders and teachers to join forces with concerned community leaders and aggressively and deliberately develop interdisciplinary approaches to the high school curriculum.

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Introduction

Beginning with the release of A Nation at Risk in 1983, dozens of national studies have emerged which criticized public education and created a demand for schools to strengthen their curricula in the basic skills. In response, educational policymakers have increased the number of academic credits for high school graduation in hopes that more time in mainline content areas will increase achievement levels and assure America's competitive edge in the future.

Concomitantly, several studies about high school graduation requirements have been conducted. One of the first was conducted in November and December of 1983 by the Education Commission of the States. The Commission surveyed all 50 states and found that many states had increased graduation requirements and that many others were contemplating major revisions (Phipo and Flakus-Mosqueda, 1984). A second national survey of state trends in graduation requirements was conducted by Dyrenfurth in 1984. The results of this study indicated that 40 states had approved or were considering increased high school graduation requirements with additional courses in mathematics, science, English, or social science. A second study conducted in 1984 was done by the Delaware Department of Public Instruction. The findings of this study indicated that at least 44 states had increased their graduation requirements for science, mathematics, and English.

The result of this increase in liberal arts requirements for high school graduation has been fewer electives for students, particularly in school systems that hold to a traditional six-period day. Thus,

the amount of time left for vocational education courses has been reduced and students' access to vocational education has been constrained (National Commission on Secondary Vocational Education, 1984).

In the meantime, technology is changing the workplace at an incredible rate and access to vocational education becomes more important because all students can benefit from vocational courses so that they may better cope with ever more complex work environments. For example, although most academically talented students may plan to pursue formal postsecondary education, vocational courses can develop their ability to apply concepts and principles, thereby increasing their skills in solving practical problems. The laboratory-style learning environments in high-quality vocational education also emphasize individual and group processes which develop self-reliance and teamwork.

Another report, With Consequences for All (1985), published by the Association for Supervision and Curriculum Development, reasoned that if increased emphasis on core subjects causes vocational programs to be scaled down or eliminated, the effects will be most negative for "third quartile" students, the roughly 24 percent of students who are likely to enter the work force immediately upon graduation. For this group, decreased or limited access to courses that promote their retention in school and employability will reduce rather than increase learning (Frantz, et al. 1981, p. 1).

Other casualties of fewer vocational education electives are the at-risk students who have one or more physical, mental, economic, or social disabilities. Vocational education, which integrates basic

skills with job skills development in a meaningful way, is often the deciding factor that motivates disadvantaged students to stay in school (Frantz, et al. 1988).

To aggravate the dropout problem by eliminating vocational education options will have a profound effect on the nation's economic and social well-being (Frantz, et al. 1988). Already major corporations are finding that they are unable to employ well-qualified high school graduates and that they must provide costly remedial basic skills training before new employees can be productive.

So, while one group argues that students should earn more academic credits; another group counters that raising the number of academic courses required for high school graduation will deprive students of the time needed for concrete training in the occupations they will enter after high school. One possible solution to this dilemma is the development of an equivalent credit policy which would allow students to earn academic credit for the basic skills education provided in vocational education courses.

What Is Equivalent Credit?

An equivalency credit (or cross credit) is the granting of full or partial graduation credit for a specific subject area to an elective area course (Options, 1986). Equivalent credit—e.g., awarding mathematics credit for the theory and practical application of mathematics found in electronics—is one approach that states and local districts are using in an attempt to restore the historic connections between academic and vocational instruction.

Which Vocational Courses Include Academic Skills?

As stated in a Nevada Department of Education Elements of Reform Discussion Paper (1987, p.2):

> English, mathematics, science, computers—these courses are the heart of occupational education. How can one become an electronics technician without mathematics and science skills? How can one work as a paralegal, the fastest growing occupation in the United States in the past five years, without excellent English communication skills?...Occupational education is the process by which academics are really applied. Occupational education offers the application of academic skills and personally chosen course goals to the world of work.

Which Vocational Programs Award Academic Credit?

There is great variation in the specific vocational education courses allowed to fulfill academic credit requirements. Where course content and/or approval is regulated at the state level, more uniformity might be expected. However, local districts often impose additional graduation requirements and decide which courses meet these local requirements. Therefore, local requirements and acceptable courses for meeting them may be either more or less restrictive than state required and approved courses.

Some states (e.g., California, Minnesota, Washington) list requirements as course areas and do not mention which specific courses meet those requirements. It then is left to local districts to interpret the intent of the stated requirement and to determine which courses are either acceptable or not. A great variety of interpretations is both expected and accepted (Copa, 1988).

The literature does not neatly outline all of the possible vocational education courses or programs receiving academic credit. A

report by Saul and Gull (1985) indicated the following vocational education courses receiving academic credit in California:

These vocational courses:	Receive academic credit in:
Agriculture, health occupations, and human development	Life science
Business communications, court reporting, and word processing	English
Auto mechanics, machine trades	Physical science
Carpentry, business mathematics, drafting, food service, and consumer mathematics	Mathematics
Family life	Social studies

Another study (Options, 1986) reported that there might be some logical places to start in that a survey of Washington State school districts found 49 allowed science credit to be earned in agriculture programs, 48 offered English equivalency in business education, and 40 offered mathematics credit in business courses.

How Extensive Is The Granting Of Equivalent Credit?

According to a nationwide study conducted in 1985 by the Delaware Department of Public Instruction, 11 states had a policy of allowing vocational credit to be counted in lieu of science or mathematics and 16 states gave local school districts jurisdiction over course credit approval. Three states had a policy prohibiting credit allowance for occupational/technical subjects as a substitute for mathematics, science, or any other required subject (Delaware Department of Public Instruction, 1985).

A Report on High School Graduation Requirements and Enrollment Patterns in High School Vocational Programs in the U.S. by Frantz, Strickland, and Elson (1986) employed a national survey of states and territories regarding graduation requirements and enrollment trends. To the question, "Does vocational education receive academic credit in your state?," 28 states said "yes." The question did not distinguish between state or local approval and credit, but a discussion of the data claims that states were counted even if it was districts that granted credit for vocational courses. In contrast, Dyrenfurth, in "State Trends in Graduation Requirements" (1986), found that only 13 states grant academic credit for vocational courses.

In a more recent survey of 29 states, Losh (1988) found that 11 states had not yet dealt with the question of academic credit for vocational program experience or were at a very early stage of discussion. Eight states left academic equivalency issues at the district level and ten states had adopted statewide policy regarding equivalent credit. However, some of these statewide policies simply delegate the responsibility of academic equivalency to local districts. For example, the Washington State school code specifically allows local school boards to determine equivalent credit policies (Options, 1986, p. 3):

> ...whether a particular course may satisfy more than one subject area requirement for different students shall be decided locally with rules adopted by boards of directors or districts. WAC 180-51-025

As the report states, "The problems associated with granting academic credit for vocational program completion remain as one of the more challenging aspects of the basic academic skill integration process" (Losh, 1988, p. 5).

What Is An Example Of A State Procedure Regarding Equivalent Credit?

In Illinois, the General Assembly passed P.A. 83-1082 on November 2, 1983. This Act sets forth the requirements for graduation from Illinois high schools. Testimony relative to this legislation stipulates that, in addition to traditional school subjects (such as algebra and geometry for mathematics and chemistry and biology for science), the sponsors of the bill intended that local school districts provide a second option for achieving compliance with these graduation requirements.

In 1984, the Department of Recognition and Supervision of the Illinois State Board of Education established the following regulations to carry out the intent of the Act:

1. Vocational courses must not supplant existing, traditional subject-area courses.

2. The local district office must have qualitative and quantitative data to justify the course as a mathematics or science related course.

3. Teachers deemed qualified to teach the course as a vocational subject do not need further academic qualifications.

4. All courses should have a course description, a course outline with the percentage of time for each unit designated, and objectives.

5. The content of the course must include 51 percent or more of mathematics or science content.

6. The course credit must have the approval of the local board of education.

To ensure both compliance and the flexible approach intended by the legislature, Illinois Public School Approval staff, during their regularly scheduled visits, assess descriptions of the course

offerings that are being used by the local school district to satisfy graduation requirements. The State Board of Education has also published a booklet, State Goals for Learning for Mathematics and Biological and Physical Sciences, which may be used to document mathematics and science concepts taught through a vocational course. There are approximately 40 school districts in Illinois which are granting mathematics or science credit for certain vocational courses (Ventures, 1988).

What Are Some Unique Approaches To Granting Academic Credit For Vocational Education Courses?

Generally, it is assumed that the granting of academic credit for basic skills instruction provided in vocational courses means that the vocational course will be examined for the amount of basic skills content included and the appropriate academic credit will then be awarded. This is a simplistic characterization of a complex process, but it serves to introduce the following five unique approaches to granting academic credit for vocational courses.

New York State Regents Action Plan. New York is an example of a state with a highly structured, centralized policy regarding the awarding of academic credit for vocational education. Beginning with the class of 1988, all students will be required to complete two units in mathematics and two units in science. Effective September 1, 1985, however, these regulations were modified to allow students pursuing an approved sequence in occupational education and a local diploma to satisfy one of the two required units in one or both of these subject areas by completing a course in occupationally related mathematics

and/or occupationally related science. Each of these courses is a second-year course that uses state-developed syllabi and curriculum materials. For those students pursuing a Regents diploma, however, only Regents mathematics courses may be used to fulfill the mathematics requirement (Kadamus and Daggett, 1986).

Virginia's 20-Credit High School Diploma. Like New York, Virginia has a state policy for awarding academic credits for vocational education. In 1984, Virginia increased its requirements for high school graduation from an 18- to a 20-credit minimum. The new diploma requires two years of mathematics, two years of laboratory science, three years of social studies, and four years of English. Because of these increased requirements, a policy was formulated allowing students to fulfill the mathematics and science requirements by completing a state-approved, 300-hour instructional sequence in agriculture, distribution, business, health occupations, occupational home economics, and trade and industrial education. Although the original standards did not permit substitution from the areas of industrial arts or home economics, efforts were initiated to develop alternative credit options in these areas as well. Unlike the New York policy, however, Virginia's allowed that if individual districts wished to include specific substitution options that were not spelled out in the regulations, these could be submitted to the appropriate program for approval (Brown, 1984).

Great Oaks Joint Vocational School District, Cincinnati, Ohio. An experimental model for five vocational programs (dental assisting, chef's training, electronics, welding, and industrial maintenance) was developed in Cincinnati's Great Oaks Joint Vocational School District.

The plan involved condensing the vocational instruction formerly provided in the traditional 4 1/2-hour instructional period into a new 3-hour instructional block and having the related instruction in mathematics, science, and communications skills, which was formerly taught by vocational instructors, handled by trained subject matter specialists. This new division of instruction was coordinated by sequencing the content of the five vocational programs into duty blocks and task areas, having vocational and academic subject matter teachers develop related job/task sheets, and assigning teachers in both areas weekly duties to ensure continued coordination of instruction throughout the individual courses (Migal, 1984).

Oregon. Infusion of vocational content into academic coursework has been the approach of two districts in Oregon. In one large district, the mathematics and science specialists proposed two new "applied mathematics" and "applied science" courses to meet new state requirements with components that speak directly to the career and consumer roles that adults face. Working with the Career and Vocational/Technical Department in this urban district, the same specialists created a series of 15-minute radio interviews with Portland-area workers who use science and mathematics in their daily tasks.

In another district involving a collaborative arrangement with local business and industry, dropout-prone students may enroll in a class that combines employability skills and work experience with two additional courses: Partnership English and Partnership Mathematics. The academic teachers assigned to these classes use a curriculum that focuses directly on the kinds of "hands-on" experiences these

youngsters are encountering in the work experience concept (Options, 1986).

Principles of Technology. Nearly 40 states have pooled resources to help support development costs for this unique two-year applied science and mathematics curriculum aimed particularly at vocational students. When development is completed there will be 104 laboratory exercises, 52 teacher demonstrations, and approximately 500 minutes of video instruction. Co-developers are the Center for Occupational Research and Development (CORD) in Waco, Texas, and the Agency for Instructional Technology (AIT) in Bloomington, Indiana.

The curriculum exposes students to 14 physics principles as they are applied to four "systems" commonly found in a number of vocational areas: fluid systems, electrical systems, mechanical systems, and thermal systems. Some districts have selected physics or physical science teachers to offer the Principles of Technology curriculum while others have selected vocational teachers with a strong science/mathematics background. Districts have opted to offer the Principles of Technology course both as science as well as vocational credit. The state of Texas recognizes Principles of Technology as the equivalent of physics (Hull, 1988).

How Is An Equivalent Credit Plan Developed?

As with any developmental process, those involved must first define the issues. Foremost among these would be the benefits to students, teachers, and taxpayers. By discovering the value of equivalent credit, some of the difficulties may be more easily resolved. These concerns include:

1. How can accountability be built into the system—how is an academic teacher assured that what a vocatinal teacher says is being taught in a particular course is actually being taught?

2. How can "watering down" of either academic or vocational coursework be avoided? Equivalent credit is NOT to provide an easy way out for students.

3. How are turf and self-protection motives handled?

A second step is to determine which curriculum areas seem to offer the most promise. A study in Washington State (Options, 1986) recommends looking inside a high school building for program areas where one or more of the following criteria are in place in order to determine which curriculum areas offer the most promise:

(a) a faculty member is interested in program improvement,

(b) a faculty member recognizes interdisciplinary possibilities,

(c) a faculty member has broad experience and/or credentials and may have more than one preparation already,

(d) a faculty member gets along with other teachers and is not afraid to ask collegues for assistance.

According to this study, interested faculty members are the key to determining which curriculum areas offer the most promise for academic equivalency programs. In fact, the Options report (1986) recommends that the opportunities to build alliances between vocational and academic instruction should be open only to those teachers willing to make the necessary investment. The study concedes that other teachers will follow once they see the payoffs in more satisfied students, parents, and employers.

Establishing a support group or curriculum committee is a third step. This committee should be composed of vocational and academic

faculty representing the areas in question, one or more "neutral" teachers who do not represent the content fields to be equated, a curriculum specialist, the high school principal, and employers from the local community. According to a Washington State study (Options, 1986), businessperson involvement is critical because they can serve as "neutralizing agents" should there be a debate about where and how certain content should be delivered. More importantly, employers can help identify the specific outcomes they seek from the skill area in question.

The fourth step is the heart of the curriculum alignment process—building communication and trust among faculty. Successful equivalent credit efforts hinge on teachers willing to spend the time it will take to build communication and trust (Options, 1986). Some suggestions to assist this process include exchanging course outlines, textbooks, and supplementary material; visiting classrooms; and visiting community work places to interview employers and analyze what is happening in everyday job tasks.

The fifth and sixth steps involve matching learning objectives between vocational and academic courses and determining credit possibilities. During this time, questions concerning degree of mastery or gaps in concepts must be resolved.

Information sharing is the seventh step. Student catalogs, as well as all school staff, must clearly address equivalent credit options. Parents, too, should be informed in order to assist their children with equivalent credit alternatives. The last step, as in all projects, is to monitor the process.

What Are Some Related Issues Concerning Equivalent Credit?

Because the awarding of equivalent credit impacts the educational system in many ways, a number of other related issues must also be resolved. Most of these issues are beyond the control of the classroom teacher and may require changes in established policy.

Teacher Certification. Losh (1988) claims that all of the respondents in his 29-state survey regarding the integration of basic skills and vocational education were concerned about teacher certification. He found that five of the states surveyed required an academically certified teacher to teach integrated courses. Another eight states were looking at certification requirements while fourteen states had not yet addressed this issue. The Options (1986) report claims that teacher certification is a reason often given as to why equivalent credit will not work. Many vocational teachers may, of course, already be qualified to teach certain academic subjects because of their extensive college preparation.

Staff Development. Integrating basic and vocational skills may require staff development in pedagogy, curriculum or objectives development, and/or familiarization with possible cross-skills. Staff development may also be a route to certify teachers in more than one field. According to the results of the study completed by the Arizona Department of Education, 16 of the 30 states surveyed are providing in-service training on the topic of integrating basic and vocational skills.

University Acceptance. In many instances, the entity that seems to be making decisions relative to the value of courses for credit are

University Boards of Regents. For example, although the State of Florida has several academic credit options (State Board rules), schools have been hesitant about implementing academic equivalency because of articulation problems with community and four-year colleges/universities (Losh, 1988). In Washington State, University of Washington and Washington State University admissions officers work directly with high school or district officials to analyze student applications. Officials from both of these universities advised that credits earned through equivalency procedures should be listed on the transcript using the "granting" high school department designation. For example, mathematics credit granted through a metal fabrication or construction sequence might be designated as geometry based on the curriculum alignment designation. The Options report (1986) claims that university acceptance is not an issue if the academic equivalent is listed in an appropriate manner.

Summary

The purpose of raising graduation requirements was to increase the quality of schooling in response to criticisms of the declining literacy and reasoning skills of youth. In so doing, the amount of time available for vocational courses has diminished proportionately.

Vocational educators have raised legitimate concerns that students' access to vocational programs may be constrained because of these increased graduation requirements. At the same time, there is a cry for relevance in the curriculum—something that academic subjects have not always been as sensitive to as vocational subjects.

An obvious response, then, is to recognize the historic connections between vocational education and academic skills and

develop interdisciplinary approaches to the high school curriculum. Granting academic credit for vocational education provides such a connection. This approach acknowledges that learning outcomes in the content area or course can be mastered in optional ways.

Indeed, many school districts throughout the nation have recognized this option and have initiated policy allowing the awarding of credit for academic skills learned in vocational courses. A variety of approaches have been taken and include such alternatives as infusing academic coursework into special vocational education courses, developing special vocational courses, partnering academic and vocational instructors in a team teaching approach, restructuring vocational laboratory time to include a special section of academic skills, and so forth.

Each of these options has evolved after thoughtful consideration of the issues and concerns at stake. The responses are, in effect, an "individualized approach" at a district or state level.

All schools, districts, and states consummating academic equivalency agreements have had to consider the impact of their decision on the system as a whole. For example, state certification requirements may make it necessary for a vocational teacher to be certified in an academic skills area(s) in order to fulfill the terms of the agreement. Some districts have had to offer in-service training to assure that academic skills are properly taught or integrated. In all instances, careful review of vocational as well as academic course content has occurred. The issues go beyond the individual school or district domain in that there is also the question of university acceptance of equivalent credits.

Obviously, these are not insolvable problems as many districts/states have come up with their own answers and satisfactorily implemented a system of academic equivalency. Perhaps, as the Minnesota document, Vocational Education and High School Graduation Requirements (Copa and Johnson, 1988, p. 123-4) states:

> ...serious policy consideration should be given to asking a significantly different question than should schools (and states) be encouraged to use vocational education to meet graduation requirements for other subject areas. Rather, the real policy question should be: Should the format and substance of graduation requirements be changed from a listing of traditional (academic) subjects with seat time to a more precise description of learner outcomes for which schools and students are held accountable? In this new context, schools would have the freedom and responsibility to devise ways for students to reach the desired learner outcomes. That is, for example, if the outcomes can be acquired through vocational education courses, then these courses could become viable options to meeting graduation requirements. The relationship to be addressed is between courses (as options) and learner outcomes and not courses to courses (i.e., vocational to mathematic courses). Each course would be evaluated in terms of its contribution to approved learner ourtcomes. In effect, this change of questions considerably alters the policy direction and resulting policy options.

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The policy of the University of Hawaii is to provide equity of opportunity in higher education, both in its educational mission and as an employer. The University is committed to complying with all state and federal statutes, rules and regulations which prohibit discrimination in its policies and practices and which require affirmative action, including but not limited to Title VI and Title VII of the Civil Rights Act of 1964; Section 503 and Section 504 of the Rehabilitation Act of 1973; Section 402 of the Vietnam Era Veterans Readjustment Act of 1974, as amended; Title IX of the 1972 Education Amendments; the Equal Pay Act of 1963; Executive Order 11246, as amended; and the Age Discrimination Act of 1975.